## IOWA DEPARTMENT OF TRANSPORTATION

To Office Bridges and Structures Date December 30, 2004

Attention All Employees Ref No. 521.1

From Gary Novey

Office Bridges and Structures

Subject Methods Memo No. 100 (Flange Transitions in Welded Girder Bridges)

Current office practice is to consider a flange transition in the negative regions of welded plated girders to save material. However, a weight savings of approximately 1000 pounds (453 kg) per flange splice should be realized in order to justify the shop welded butt splice. See Bridge Design Manual article 5.5.1.4.1.6. Current design practice is to reduce the flange plate thickness, and maintain the same flange plate width as the thicker plate.

At welded flange splices, it is also good design practice to limit the flange cross sectional area of the thinner plate to not less than 50% of the cross sectional area of the thicker plate. This practice reduces the stress concentration at the transition area. Therefore, for all future welded plate girder bridges when welded flange butt splice transitions are used, the thinner plate shall not be less than 50% of the thicker plate.

In addition, when designing the bottom negative flange next to the adjacent positive region (field splice location), the designer should try and maintain the same approximate width compared to the positive flange plate or larger for aesthetic reasons.

References:

Myths and Realities of Steel Bridges, 1994 by AISC

Example 1 Three-Span Continuous Composite I Girder, LRFD, Third Edition By Grubb & Schmidt

GAN:jtn/dgb:bj